

E1-192



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

IN REPLY REFER TO:
PPN 2958

MAR 27 2003

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Mr. Gary Petersen
Myra L. Frank & Associates, Inc.
811 West 7th Street, Suite 800
Los Angeles, California 90017

Dear Mr. Petersen:

Thank you for the opportunity to review the notice of intent to prepare an environmental analysis, pursuant to the National Environmental Policy Act, for the proposed construction and operation of the Quebecor World Rail Extension Project in Merced County, California. The enclosures are intended to assist you in your continued environmental review of this proposal. Future consultation with the U.S. Fish and Wildlife Service (Service) may be required under the Fish and Wildlife Coordination Act if project activities are anticipated to impact jurisdictional wetlands, and/or the Endangered Species Act if project activities are anticipated to affect federally listed species.

Enclosure A provides a list of sensitive species that may occur in or near the project site. Enclosure B describes Federal agencies responsibility under Section 7(a) and (c) of the Endangered Species Act. Enclosure C recommends guidelines for conducting and reporting botanical inventories for federally listed, proposed and candidate plants. Enclosure D recommends general guidelines for identifying and mitigating project impacts to fish, wildlife, and their habitats. The Council on Environmental Quality developed regulations for implementing the National Environmental Policy Act, and defines mitigation to include: (1) avoiding the impact; (2) minimizing the impact; (3) rectifying the impact; (4) reducing or eliminating the impact over time; and (5) compensating for impacts. The Service supports and adopts this definition of mitigation and considers the specific elements to represent the desirable sequence of steps in the mitigation planning process. Accordingly, we maintain the best way to mitigate adverse biological impacts is avoidance when at all possible.

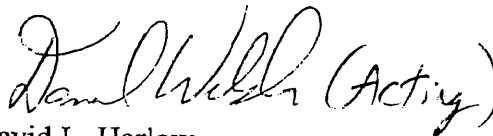
We encourage you to use these guidelines to develop a comprehensive environmental document that addresses these needs.

Mr. Gary Petersen

2

If you have any questions regarding these comments, please contact Jerry Bielfeldt (Watershed Planning Branch) in the Sacramento Fish and Wildlife Office at (916) 414-6584.

Sincerely,

A handwritten signature in black ink, appearing to read "David L. Harlow (Acting)".

David L. Harlow
Acting Field Supervisor

Enclosures

cc:

AES, Portland, OR

Regional Manager, CDFG, Region 4, Fresno, CA (w/o enclosures)

ENCLOSURE A

Endangered and Threatened Species that May Occur in
or be Affected by Projects in the Selected Quads Listed Below
Reference File No. 1-1-03-SP-1533

BNSF Rail Line to Quebecor World Inc., Merced

March 21, 2003

QUAD: 422D ATWATER

Listed Species

Mammals

riparian (San Joaquin Valley) woodrat, *Neotoma fuscipes riparia* (E) *
San Joaquin kit fox, *Vulpes macrotis mutica* (E)

Birds

bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

blunt-nosed leopard lizard, *Gambelia (=Crotaphytus) sila* (E)
giant garter snake, *Thamnophis gigas* (T)

Amphibians

California tiger salamander, *Ambystoma californiense* (C/E)
California red-legged frog, *Rana aurora draytonii* (T)

Fish

delta smelt, *Hypomesus transpacificus* (T)
Central Valley steelhead, *Oncorhynchus mykiss* (T) NMFS
winter-run chinook salmon, *Oncorhynchus tshawytscha* (E) NMFS
Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T) NMFS
Sacramento splittail, *Pogonichthys macrolepidotus* (T)

Invertebrates

Conservancy fairy shrimp, *Branchinecta conservatio* (E)
longhorn fairy shrimp, *Branchinecta longiantenna* (E)
vernal pool fairy shrimp, *Branchinecta lynchi* (T)
valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)
vernal pool tadpole shrimp, *Lepidurus packardi* (E)

Plants

Colusa grass, *Neostapfia colusana* (T)

Proposed Species

Birds

mountain plover, *Charadrius montanus* (PT)

Invertebrates

Reference File No. 1-1-03-SP-1533

Page 2

Critical habitat, vernal pool invertebrates, *See Federal Register 67:59883 (PX)*

Plants

Critical habitat, vernal pool plants, *See Federal Register 67:59883 (PX)*

Candidate Species

Fish

green sturgeon, *Acipenser medirostris* (C)

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C) NMFS

Species of Concern

Mammals

San Joaquin (=Nelson's) antelope squirrel, *Ammospermophilus nelsoni* (CA)

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)

Merced kangaroo rat, *Dipodomys heermanni dixonii* (SC)

greater western mastiff-bat, *Eumops perotis californicus* (SC)

small-footed myotis bat, *Myotis ciliolabrum* (SC)

long-legged myotis bat, *Myotis volans* (SC)

Yuma myotis bat, *Myotis yumanensis* (SC)

San Joaquin pocket mouse, *Perognathus inornatus* (SC)

Birds

tricolored blackbird, *Agelaius tricolor* (SC)

western burrowing owl, *Athene cunicularia hypugaea* (SC)

Aleutian Canada goose, *Branta canadensis leucopareia* (D)

Swainson's hawk, *Buteo Swainsoni* (CA)

ferruginous hawk, *Buteo regalis* (SC)

Costa's hummingbird, *Calypte costae* (SC)

Lawrence's goldfinch, *Carduelis lawrencei* (SC)

Vaux's swift, *Chaetura vauxi* (SC)

white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)

little willow flycatcher, *Empidonax traillii brewsteri* (CA)

prairie falcon, *Falco mexicanus* (SC)

greater sandhill crane, *Grus canadensis tabida* (CA)

loggerhead shrike, *Lanius ludovicianus* (SC)

Lewis' woodpecker, *Melanerpes lewis* (SC)

long-billed curlew, *Numenius americanus* (SC)

Nuttall's woodpecker, *Picoides nuttallii* (SLC)

white-faced ibis, *Plegadis chihi* (SC)

rufous hummingbird, *Selasphorus rufus* (SC)

Reference File No. 1-1-03-SP-1533

Page 3

Reptiles

- silvery legless lizard, *Anniella pulchra pulchra* (SC)
- northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
- southwestern pond turtle, *Clemmys marmorata pallida* (SC)
- California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

- western spadefoot toad, *Spea hammondi* (SC)

Fish

- Pacific lamprey, *Lampetra tridentata* (SC)
- longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

- Midvalley fairy shrimp, *Branchinecta mesovallensis* (SC)
- California linderiella fairy shrimp, *Linderiella occidentalis* (SC)
- molestan blister beetle, *Lytta molesta* (SC)

Plants

- vernal pool (=persistent-fruited, Sacramento) saltbush (=smallscale, saltscale), *Atriplex persistens* (SC) *
- Merced monardella, *Monardella leucocephala* (SC) **

KEY:

(E)	<i>Endangered</i>	Listed (in the Federal Register) as being in danger of extinction.
(T)	<i>Threatened</i>	Listed as likely to become endangered within the foreseeable future.
(P)	<i>Proposed</i>	Officially proposed (in the Federal Register) for listing as endangered or threatened.
(PX)	<i>Proposed Critical Habitat</i>	Proposed as an area essential to the conservation of the species.
(C)	<i>Candidate</i>	Candidate to become a <i>proposed</i> species.
(SC)	<i>Species of Concern</i>	May be endangered or threatened. Not enough biological information has been gathered to support listing at this time.
(SLC)	<i>Species of Local Concern</i>	Species of local or regional concern or conservation significance.
(MB)	<i>Migratory Bird</i>	Migratory bird
NMFS	NMFS species	Under the jurisdiction of the National Marine Fisheries Service. Contact them directly.
(D)	<i>Delisted</i>	Delisted. Status to be monitored for 5 years.
(CA)	<i>State-Listed</i>	Listed as threatened or endangered by the State of California.
(*)	<i>Extirpated</i>	Possibly extirpated from this quad.
(**)	<i>Extinct</i>	Possibly extinct.
	<i>Critical Habitat</i>	Area essential to the conservation of a species.

Endangered and Threatened Species that May Occur in or be Affected by
Projects in the Area of the Following California Counties
Reference File No. 1-1-03-SP-1533
BNSF Rail Line to Quebecor World Inc., Merced
March 21, 2003

MERCED COUNTY

Listed Species

Mammals

- Fresno kangaroo rat, *Dipodomys nitratoideus exilis* (E)
- San Joaquin kit fox, *Vulpes macrotis mutica* (E)
- giant kangaroo rat, *Dipodomys ingens* (E)
- riparian (San Joaquin Valley) woodrat, *Neotoma fuscipes riparia* (E) *
- riparian brush rabbit, *Sylvilagus bachmani riparius* (E) *

Birds

- bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

- blunt-nosed leopard lizard, *Gambelia (=Crotaphytus) sila* (E)
- giant garter snake, *Thamnophis gigas* (T)

Amphibians

- California red-legged frog, *Rana aurora draytonii* (T)
- California tiger salamander, *Ambystoma californiense* (C/E)

Fish

- Central Valley steelhead, *Oncorhynchus mykiss* (T) NMFS
- Sacramento splittail, *Pogonichthys macrolepidotus* (T)
- delta smelt, *Hypomesus transpacificus* (T) *

Invertebrates

- Conservancy fairy shrimp, *Branchinecta conservatio* (E)
- longhorn fairy shrimp, *Branchinecta longiantenna* (E)
- valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)
- vernal pool fairy shrimp, *Branchinecta lynchi* (T)
- vernal pool tadpole shrimp, *Lepidurus packardii* (E)

Plants

- Colusa grass, *Neostapfia colusana* (T)
- Greene's tuctoria (=Orcutt grass), *Tuctoria greenei* (E)
- Hoover's spurge, *Chamaesyce hooveri* (T)
- San Joaquin Valley Orcutt grass, *Orcuttia inaequalis* (T)
- hairy Orcutt grass, *Orcuttia pilosa* (E)

Reference File No. 1-1-03-SP-153

Page 5

succulent (=fleshy) owl's-clover, *Castilleja campestris* ssp. *succulenta* (T)

Proposed Species

Birds

mountain plover, *Charadrius montanus* (PT)

Invertebrates

Critical habitat, vernal pool invertebrates, See *Federal Register* 67:59883 (PX)

Plants

Critical habitat, vernal pool plants, See *Federal Register* 67:59883 (PX)

Candidate Species

Birds

Western yellow-billed cuckoo, *Coccyzus americanus occidentalis* (C) *

Fish

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C) NMFS

Critical habitat, Central Valley fall/late fall-run chinook, *Oncorhynchus tshawytscha* (C) NMFS
green sturgeon, *Acipenser medirostris* (C)

Species of Concern

Mammals

Merced kangaroo rat, *Dipodomys heermanni dixonii* (SC)

Pacific western big-eared bat, *Corynorhinus* (=Plecotus) *townsendii townsendii* (SC)

San Joaquin (=Nelson's) antelope squirrel, *Ammospermophilus nelsoni* (CA)

San Joaquin pocket mouse, *Perognathus inornatus* (SC)

Yuma myotis bat, *Myotis yumanensis* (SC)

fringed myotis bat, *Myotis thysanodes* (SC)

greater western mastiff-bat, *Eumops perotis californicus* (SC)

long-eared myotis bat, *Myotis evotis* (SC)

long-legged myotis bat, *Myotis volans* (SC)

pale Townsend's big-eared bat, *Corynorhinus* (=Plecotus) *townsendii pallescens* (SC)

short-nosed kangaroo rat, *Dipodomys nitratoides brevinasus* (SC)

small-footed myotis bat, *Myotis ciliolabrum* (SC)

spotted bat, *Euderma maculatum* (SC)

Birds

Aleutian Canada goose, *Branta canadensis leucopareia* (D)

American bittern, *Botaurus lentiginosus* (SC)

American peregrine falcon, *Falco peregrinus anatum* (D)

Bell's sage sparrow, *Amphispiza belli belli* (SC)

California thrasher, *Toxostoma redivivum* (SC)

Reference File No. 1-1-03-SP-153

Page 6

Costa's hummingbird, *Calypte costae* (SC)
Lawrence's goldfinch, *Carduelis lawrencei* (SC)
Lewis' woodpecker, *Melanerpes lewis* (SC)
Nuttall's woodpecker, *Picoides nuttallii* (SLC)
Swainson's hawk, *Buteo Swainsoni* (CA)
Vaux's swift, *Chaetura vauxi* (SC)
bank swallow, *Riparia riparia* (CA)
ferruginous hawk, *Buteo regalis* (SC)
greater sandhill crane, *Grus canadensis tabida* (CA)
little willow flycatcher, *Empidonax traillii brewsteri* (CA)
loggerhead shrike, *Lanius ludovicianus* (SC)
long-billed curlew, *Numenius americanus* (SC)
oak titmouse, *Baeolophus inornatus* (SLC)
olive-sided flycatcher, *Contopus cooperi* (SC)
rufous hummingbird, *Selasphorus rufus* (SC)
tricolored blackbird, *Agelaius tricolor* (SC)
western burrowing owl, *Athene cunicularia hypugaea* (SC)
white-faced ibis, *Plegadis chihi* (SC)
white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)

Reptiles

California horned lizard, *Phrynosoma coronatum frontale* (SC)
San Joaquin coachwhip (=whipsnake), *Masticophis flagellum ruddocki* (SC)
northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
silvery legless lizard, *Anniella pulchra pulchra* (SC)
southwestern pond turtle, *Clemmys marmorata pallida* (SC)

Amphibians

foothill yellow-legged frog, *Rana boylei* (SC)
western spadefoot toad, *Spea hammondi* (SC)

Fish

Kern brook lamprey, *Lampetra hubbsi* (SC)
Pacific lamprey, *Lampetra tridentata* (SC)
longfin smelt, *Spirinchus thaleichthys* (SC)
river lamprey, *Lampetra ayresi* (SC)

Invertebrates

California linderiella fairy shrimp, *Linderiella occidentalis* (SC)
Ciervo aegialian scarab beetle, *Aegialia concinna* (SC)
Midvalley fairy shrimp, *Branchinecta mesovallensis* (SC)

Reference File No. 1-1-03-SP-153

Page 7

San Joaquin dune beetle, *Coelus gracilis* (SC)
molestan blister beetle, *Lytta molesta* (SC)

Plants

Arburua Ranch jewelflower, *Streptanthus insignis* ssp. *lyonii* (SC)
Boggs Lake hedge-hyssop, *Gratiola heterosepala* (CA)
Hall's bush mallow, *Malacothamnus hallii* (=M. *fasciculatus*) (SLC)
Henderson's bent grass, *Agrostis hendersonii* (SC)
Hoover's caycadenia, *Calycadenia hooveri* (SLC)
Hoover's cryptantha, *Cryptantha hooveri* (SLC)
Lost Hills saltbush (=crownscale), *Atriplex vallicola* (SC)
Merced monardella, *Monardella leucocephala* (SC) **
Merced phacelia, *Phacelia ciliata* var. *opaca* (SC)
San Joaquin spearscale (=saltbush), *Atriplex joaquiniana* (SC)
alkali milk-vetch, *Astragalus tener* var. *tener* (SC)
beaked clarkia, *Clarkia rostrata* (SC)
brittlescale, *Atriplex depressa* (SC)
delta coyote-thistle (=button-celery), *Eryngium racemosum* (CA)
hairless allocarya (=popcornflower), *Plagiobothrys glaber* (SC) **
heartscale, *Atriplex cordulata* (SC)
hispid bird's-beak, *Cordylanthus mollis* ssp. *hispidus* (SC)
interior California (Hospital Canyon) larkspur, *Delphinium californicum* ssp. *interius* (SC)
large-flowered (=flower) linanthus, *Linanthus grandiflorus* (SC)
lesser saltscale, *Atriplex minuscula* (SC) *
pincushion navarretia, *Navarretia myersii* spp. *myersii* (SC)
prostrate navarretia (=prostrate pincushionplant), *Navarretia prostrata* (SC)
recurved larkspur, *Delphinium recurvatum* (SC)
subtle orache, *Atriplex subtilis* (SLC)
valley sagittaria (=Sanford's arrowhead), *Sagittaria sanfordii* (SC)
vernal pool (=persistent-fruited, Sacramento) saltbush (=smallscale, saltscale), *Atriplex persistens* (SC)

Enclosure B

FEDERAL AGENCIES' RESPONSIBILITIES UNDER
SECTIONS 7(a) and (c) OF THE ENDANGERED SPECIES ACTSECTION 7(a) Consultation/Conference

Requires: (1) Federal agencies to utilize their authorities to carry out programs to conserve endangered and threatened species; (2) Consultation with FWS when a Federal action may affect a listed endangered or threatened species to insure that any action authorized, funded, or carried out by a Federal agency is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. The process is initiated by the Federal agency after determining the action may affect a listed species; and (3) Conference with FWS when a Federal action is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat.

SECTION 7(c) Biological Assessment-Major Construction Activity*

Requires Federal agencies or their designees to prepare a Biological Assessment (BA) for major construction activities. The BA analyzes the effects of the action** on listed and proposed species. The process begins with a Federal agency requesting from FWS a list of proposed and listed threatened and endangered species. The BA should be completed within 180 days after its initiation (or within such a time period as is mutually agreeable). If the BA is not initiated within 90 days of receipt of the list, the accuracy of the species list should be informally verified with our Service. No irreversible commitment of resources is to be made during the BA process which would foreclose reasonable and prudent alternatives to protect endangered species. Planning, design, and administrative actions may proceed; however, no construction may begin.

We recommend the following for inclusion in the BA: an on-site inspection of the area affected by the proposal which may include a detailed survey of the area to determine if the species or suitable habitat is present; a review of literature and scientific data to determine species' distribution, habitat needs, and other biological requirement; interviews with experts, including those within FWS, State conservation departments, universities and others who may have data not yet published in scientific literature; an analysis of the effects of the proposal on the species in terms of individuals and populations, including consideration of indirect effects of the proposal on the species and its habitat; an analysis of alternative actions considered. The BA should document the results, including a discussion of study methods used, and problems encountered, and other relevant information. The BA should conclude whether or not a listed or proposed species will be affected. Upon completion, the BA should be forwarded to our office.

*A construction project (or other undertaking having similar physical impacts) which is a major federal action significantly affecting the quality of the human environment as referred to in NEPA (42 U.S.C. 4332(2)C).

***"Effects of the action" refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action.

ENCLOSURE C

GUIDELINES FOR CONDUCTING AND REPORTING BOTANICAL INVENTORIES
FOR FEDERALLY LISTED, PROPOSED AND CANDIDATE PLANTS
(September 23, 1996)

These guidelines describe protocols for conducting botanical inventories for federally listed, proposed and candidate plants, and describe minimum standards for reporting results. The Service will use, in part, the information outlined below in determining whether the project under consideration may affect any listed, proposed or candidate plants, and in determining the direct, indirect, and cumulative effects.

Field inventories should be conducted in a manner that will locate listed, proposed, or candidate species (target species) that may be present. The entire project area requires a botanical inventory, except developed agricultural lands. The field investigator(s) should:

1. Conduct inventories at the appropriate times of year when target species are present and identifiable. Inventories will include all potential habitats. Multiple site visits during a field season may be necessary to make observations during the appropriate phenological stage of all target species.
2. If available, use a regional or local reference population to obtain a visual image of the target species and associated habitat(s). If access to reference populations is not available, investigators should study specimens from local herbaria.
3. List every species observed and compile a comprehensive list of vascular plants for the entire project site. Vascular plants need to be identified to a taxonomic level which allows rarity to be determined.
4. Report results of botanical field inventories that include:
 - a. a description of the biological setting, including plant community, topography, soils, potential habitat of target species, and an evaluation of environmental conditions, such as timing or quantity of rainfall, which may influence the performance and expression of target species
 - b. a map of project location showing scale, orientation, project boundaries, parcel size, and map quadrangle name
 - c. survey dates and survey methodology(ies)
 - d. if a reference population is available, provide a written narrative describing the target species reference population(s) used, and date(s) when observations were made
 - e. a comprehensive list of all vascular plants occurring on the project site for each habitat type
 - f. current and historic land uses of the habitat(s) and degree of site alteration
 - g. presence of target species off-site on adjacent parcels, if known
 - h. an assessment of the biological significance or ecological quality of the project site in a local and regional context
5. If target species is(are) found, report results that additionally include:

- a. a map showing federally listed, proposed and candidate species distribution as they relate to the proposed project
 - b. if target species is (are) associated with wetlands, a description of the direction and integrity of flow of surface hydrology. If target species is (are) affected by adjacent off-site hydrological influences, describe these factors.
 - c. the target species phenology and microhabitat, an estimate of the number of individuals of each target species per unit area; identify areas of high, medium and low density of target species over the project site, and provide acres of occupied habitat of target species. Investigators could provide color slides, photos or color copies of photos of target species or representative habitats to support information or descriptions contained in reports.
 - d. the degree of impact(s), if any, of the proposed project as it relates to the potential unoccupied habitat of target habitat.
6. Document findings of target species by completing California Native Species Field Survey Form(s) and submit form(s) to the Natural Diversity Data Base. Documentation of determinations and/or voucher specimens may be useful in cases of taxonomic ambiguities, habitat or range extensions.
 7. Report as an addendum to the original survey, any change in abundance and distribution of target plants in subsequent years. Project sites with inventories older than three years from the current date of project proposal submission will likely need additional survey. Investigators need to assess whether an additional survey(s) is (are) needed.
 8. Adverse conditions may prevent investigator(s) from determining presence or identifying some target species in potential habitat(s) of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any year. An additional botanical inventory(ies) in a subsequent year(s) may be required if adverse conditions occur in a potential habitat(s). Investigator(s) may need to discuss such conditions.
 9. Guidance from California Department of Fish and Game (CDFG) regarding plant and plant community surveys can be found in Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities, 1984. Please contact the CDFG Regional Office for questions regarding the CDFG guidelines and for assistance in determining any applicable State regulatory requirements.

ENCLOSURE D

The goal of the U.S. Fish and Wildlife Service is to conserve, protect and enhance fish, wildlife, and their habitats by timely and effective provision of fish and wildlife information and recommendations. To assist us in accomplishing this goal, we would like to see the items described below addressed in your environmental documents for the proposed project.

Project Description

The document should very clearly state the purposes of, and document the needs for, the proposed project so that the capabilities of the various alternatives to meet the purposes and needs can be readily determined.

A thorough description of all permanent and temporary facilities to be constructed and work to be done as a part of the project should be included. The document should identify any new access roads, equipment staging areas, and gravel processing facilities which are needed. Figures accurately depicting proposed project features in relation to natural features (such as streams, wetlands, riparian areas, and other habitat types) in the project area should be included.

Affected Environment

The document should show the location of, and describe, all vegetative cover types in the areas potentially affected by all project alternatives and associated activities. Tables with acreage of each cover type with and without the project for each alternative would also be appropriate. We recommend that all wetlands in the project area be delineated and described according to the classification system found in the Service's Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). The Service's National Wetland Inventory maps would be one starting point for this effort, but updated information may be needed.

The document should present and analyze a full range of alternatives to the proposed project. In an effort to fully comply with the Clean Water Act and meet the Federal government's goal of no net loss of wetlands, at least one alternative should be designed to avoid all impacts to wetlands, including riparian areas. Similarly, within each alternative, measures to minimize or avoid impacts to all habitats (wetlands, riparian areas, grasslands, oak woodlands, etc.) should be included.

Lists of fish and wildlife species expected to occur in the project area should be in the document. The lists should also indicate for each species whether it is a resident or migrant, and the time of year it would be expected in the project area.

Environmental Consequences

The sections on impacts to fish and wildlife should discuss impacts from vegetation removal (both permanent and temporary), filling or degradation of wetlands, interruption of wildlife migration corridors, and disturbance from trucks and other machinery during construction and/or operation. These sections should also analyze possible impacts to streams from construction of outfall structures, pipeline crossings, and filling. Impacts on water quality, including nutrient

loading, sedimentation, toxins, biological oxygen demand, and temperature in receiving waters should also be discussed in detail along with the resultant effects on fish and aquatic invertebrates. Discussion of indirect impacts to fish, wildlife, and their habitats, including impacts from growth induced by the proposed project, should also be addressed in the document. The impacts of each alternative should be discussed in sufficient detail to allow comparison between the alternatives.

The cumulative impacts of the project, when viewed in conjunction with other past, existing, and foreseeable projects, needs to be addressed. Cumulative impacts to fish, wildlife and habitats, including water quality, should be included.

Mitigation Planning.

Under provisions of the Fish and Wildlife Coordination Act, the Service advises and provides recommendations to Federal agencies planning water development activities or permitting such activities. These Federal agencies are to consult with the Service and give equal consideration to the conservation and rehabilitation of fish and wildlife resources with other project purposes. When reviewing proposed activities, the Service generally does not object to projects meeting the following criteria:

1. They are ecologically sound;
2. The least environmentally damaging reasonable alternative is selected;
3. Every reasonable effort is made to avoid or minimize damage or loss of fish and wildlife resources and uses;
4. All important recommended means and measures have been adopted, with guaranteed implementation to satisfactorily compensate for unavoidable damage or loss consistent with the appropriate mitigation goal; and
5. For wetlands and shallow water habitats, the proposed activity is clearly water dependent and there is a demonstrated public need.

The Service may recommend the "no project" alternative for those projects which do not meet all of the above criteria, and where there is likely to be a loss of fish and wildlife resources.

When projects impacting fish and wildlife resources are deemed acceptable to the Service, we recommend full mitigation for any impacts to fish and wildlife habitat. The Council on Environmental Quality regulations for implementing the National Environmental Policy Act define mitigation to include: 1) avoiding the impact; 2) minimizing the impact; 3) rectifying the impact; 4) reducing or eliminating the impact over time; and 5) compensating for impacts. The Service supports and adopts this definition of mitigation and considers the specific elements to

represent the desirable sequence of steps in the mitigation planning process. Accordingly, we maintain that the best way to mitigate for adverse biological impacts is to avoid them altogether.

Project documentation should include a mitigation plan that describes all measures proposed to avoid, minimize, or compensate for impacts to fish and wildlife and their habitats. The measures should be presented in as much detail as possible to allow evaluation of their probable effectiveness.

To determine mitigation credits available for unavoidable impacts, future conditions on the mitigation site, absent any mitigation, are estimated and then compared to conditions expected to develop as a result of implementing the mitigation plan.

Mitigation habitat should be equal to or exceed the quality of the habitat to be affected by the project. Baseline information would need to be gathered at the impact site to be able to quantify this goal, such as plant species diversity, shrub and tree canopy cover, number of stems per acre, tree height, etc. Judging the ultimate success of the project should include success of mitigation, which should use these same measurements at the mitigation site as standards of comparison. Mitigation success criteria should aim toward equaling or exceeding the quality of the highest quality habitat to be affected. In other words, the mitigation effort would be deemed a success in relation to this goal if the mitigation site met or exceeded target habitat measurements (plant cover, density, species diversity, etc.).

Criteria should be developed for assessing the progress of mitigative measures during their developmental stages as well. Assessment criteria should include rates of plant growth, plant health, and evidence of natural reproduction.

The plan should present the proposed ground elevations at the mitigation site, along with elevations in the adjacent areas. A comparison of the soils of the proposed mitigation and adjacent areas should also be included in the plan, and a determination made as to the suitability of the soils to support habitats consistent with the mitigation goals.

Because of their very high value to migratory birds, and ever-increasing scarcity in California, our mitigation goal for wetlands (including riparian and riverine wetlands) is no net loss of in-kind habitat value or acreage, whichever is greater. As a result of their high value and reliance on suitable hydrological conditions, wetlands require development of additional information on the predicted hydrology of the mitigation site. The plan should describe the depth of the water table, and the frequency, duration, areal extent, and depth of flooding which would occur on the site. The hydrologic information should include an analysis of extreme conditions (drought, flooding) as well as typical conditions.

A mitigation plan must include a timeframe for implementing the mitigation in relation to the proposed project. We recommend that mitigation be initiated prior to the onset of construction. If there will be a substantial time lag between project construction and completion of the

mitigation, a net loss of habitat values would result, and more mitigation would be required to offset this loss.

Generally, monitoring of the mitigation site should occur annually for at least the first five years, biennially for years 6 through 11, and every five years thereafter until the mitigation has met all success criteria. Remedial efforts and additional monitoring should occur if success criteria are not met during the first five years. Some projects will require monitoring throughout the life of the project. Reports should be prepared after each monitoring session.

The plan should require the preparation of "as-built" plans. Such plans provide valuable information, especially if the mitigation effort fails. Similarly, a "time-zero" report should be mandated. This report would describe exactly what was done during the construction of the mitigation project, what problems were encountered, and what corrections or modifications to the plans were undertaken.

The plan should detail how the site is to be maintained during the mitigation establishment period, and how long the establishment period will be. It will also be important to note what entity will perform the maintenance activities, and what entity will ultimately own and manage the site. In addition, a mechanism to fund the maintenance and management of the site should be established and identified. A permanent easement should be placed on the property used for the mitigation that would preclude incompatible activities on the site in perpetuity.

Finally, in some cases, a performance bond may be required as part of the mitigation plan. The amount of the bond should be sufficient to cover the costs of designing and implementing an adequate mitigation plan (and purchasing land if needed) should the proposed plan not succeed.

Reference:

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. FWS/OBS-79/31. U.S. Fish and Wildlife Service, Washington, D.C. 103 pp.